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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte JOHN F. BOYLAN and SCOTT J. HUTER*

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Appeal 2009-010302  
Application 10/764,841  
Technology Center 3700

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Before JOHN C. KERINS, STEVEN D.A. McCARTHY, and  
MICHAEL W. O'NEILL, *Administrative Patent Judges*.

O'NEILL, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

John F. Boylan and Scott J. Huter (Appellants) appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1, 2, 4, 6, and 15-20 under 35 U.S.C. § 103(a) as unpatentable over Tsugita (US 5,910,154, Jun. 8, 1999) and Mitose (US 5,885,381, Mar. 23, 1999) and the rejection of claims 3 and 5 under 35 U.S.C. § 103(a) as unpatentable over Tsugita, Mitose, and Clark (US 5,713,853, Feb. 3, 1998). We have jurisdiction under 35 U.S.C. § 6(b). We AFFIRM.

*The Invention*

The claims on appeal relate to a Nitinol alloy design for sheath vascular devices. Title.

Claim 1, reproduced below, is illustrative of the subject matter on appeal.

1. An embolic filtering system for use in a body lumen, comprising
  - a self-expanding strut assembly including a superelastic alloy, wherein the superelastic alloy comprises at least one ternary element and exhibits a decreased stress hysteresis due to a lowered loading plateau stress compared to that of the superelastic alloy without the at least one ternary element; and
  - a filter element disposed on the strut assembly.

**OPINION**

The Examiner found Tsugita discloses the invention substantially as claimed. Ans. 3. The Examiner acknowledged that Tsugita does not disclose a superelastic (SE) alloy that includes a ternary element. *Id.* The Examiner found Mitose teaches an SE alloy having a ternary element. *Id.* The Examiner found Mitose taught adding the ternary element to the SE alloy reduces the stress hysteresis and improves hot workability compared to a binary SE alloy based on a comparison of figures 2 and 4 in Mitose. *Id.* The Examiner then concluded it would have been obvious to replace the SE alloy material within the strut assembly of Tsugita with the SE alloy of Mitose. *Id.* The Examiner's initial reasoning for the substitution was "to reduce the stress hysteresis and improve hot workability in the device." *Id.*

Responding to Appellants, the Examiner maintained that the aforementioned decreased stress hysteresis reasoning was correct since the Examiner further found Mitose discloses an SE alloy material within the claimed atomic percent ranges for titanium and the ternary element (palladium). Ans. 5-6. The Examiner further reasoned that the proposed substitution and the conclusion of obviousness based on the proposed substitution were proper since the Examiner determined that the proposed substitution was a simple substitution of one known element for another to obtain predictable results that were within the level of one ordinary skill in the art. Ans. 6. Additionally, the Examiner reasoned that the proposed substitution was proper since the Examiner asserted “it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.” *Id.*

Appellants do not contest the Examiner’s findings with respect to the Tsugita disclosure vis-à-vis the claimed invention. Instead, Appellants’ contentions focus on the Examiner’s findings and understandings concerning Mitose’s teachings. App Br. 11-15, *see particularly* figures 1-3 on page 12. Responding to the Examiner’s Answer, Appellants contend that, while both the claimed invention and Mitose are achieving a decreased hysteresis, the claimed invention’s reduction in hysteresis comes from the result of the lower loading plateau stress, whereas Mitose achieves the smaller hysteresis from providing a higher unloading plateau stress from the addition of a ternary element. Reply Br. 3. Responding to the Examiner’s further reasoning that the proposed substitution is a “simple substitution,” Appellants assert such a substitution would not have been predictable.

Reply Br. 4. Appellants contend that since the express teachings of Mitose are directed to reducing hysteresis in the opposite manner as that claimed, such a substitution would not be a simple substitution. *Id.* Further, Appellants state that they have previously submitted the Boylan article as evidence that the results of the Examiner's proposed substitution are unexpected.

Given the Examiner's findings and analysis and the Appellants' evidence and arguments against the Examiner's positions, we conclude that the Examiner correctly found that Mitose's SE alloy decreases stress hysteresis by having a ternary element, e.g. Pd, as compared to the SE alloy without the ternary element when citing to figures 2 and 4. Figure 2 depicts the stress-strain curve of the prior art Ni—Ti SE alloy in which the alloy is shown as having an approximate loading stress of 400 MPa and an approximate unloading stress of 50 MPa. Figure 4 depicts the stress-strain curve for Mitose's Ni—Ti—Pd SE alloy in which the alloy is shown as having an approximate loading stress of 350 MPa and an approximate unloading stress 175 MPa. As such, Mitose evidences a reduction in stress hysteresis from both a reduction in the loading plateau stress as well as an increase in the unloading stress.<sup>1</sup> Accordingly, Mitose teaches a SE alloy comprising an additional ternary element and exhibits a decrease in stress hysteresis due to a lowered loading plateau stress compared to that of the same SE alloy without the additional ternary element.

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<sup>1</sup> Appellants' attempt to illustrate, in Figure 2 at page 12 of the Appeal Brief, the reduction in hysteresis in Mitose does not accurately reflect the change in loading plateau stress seen in comparing Mitose's Figures 2 and 4.

As such, Appellants' arguments against rejection are unpersuasive to show Examiner error since the arguments are premised upon the misconception that Mitose reduces the stress hysteresis through only increasing the unloading stress plateau with the addition of the ternary element of Pd. Moreover, the Examiner did not err in concluding that substituting the Ni—Ti—Pd SE alloy for the prior art Ni—Ti SE alloy would have been obvious to a person having ordinary skill in the art at the time of the invention as a simple substitution of known elements that would achieve the predictable result of reducing stress hysteresis by both decreasing the loading plateau stress and increasing the unloading plateau since such an express teaching is within Mitose.

## DECISION

Based on the foregoing, we affirm the Examiner's decision to reject claims 1, 2, 4, 6, and 15-20 under 35 U.S.C. § 103(a) as unpatentable over Tsugita and Mitose and the rejection of claims 3 and 5 under 35 U.S.C. § 103(a) as unpatentable over Tsugita, Mitose, and Clark.

AFFIRMED

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